THE AEROSPACE CORPORATION

# *Risk Assessment in the Pre-Award Phase Workshop*

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# *Risk Management in the Pre-Award Phase*

- **Session 1: Planning Session with Program Manager**
  - **Overview process, establish objectives, identify team**
- **Session 2: Requirements Drivers**
  - **Structured brainstorming session to identify key requirements as a framework for risk assessment**
- **Session 3: Risk Assessment**
  - **Group session to identify and rank top risks for program**
- **Session 4: Risk Handling Plans**
  - **Define plans for each risk that will be handled by team**

# *Purpose of This Session*

- **Identify and analyze the risks associated with the program**
- **Determine which risk should be handled now**
- **Define an approach for drafting handling plans**
- **Influence acquisition planning, RFP development and source selection**
- **Describe how the process should and can be sustained through the pre-award and execution phases**

# *Agenda*

- **Overview of Risk Assessment Process**
- **Identify and Assess Risks**
- **Define Game Plan for next steps**
- **Wrap-up**

# Risk Assessment

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## *Background*

# *What Is Risk?*

**"Risk is a measure of the inability to achieve program objectives within defined cost, schedule, and technical constraints ..." [2]**

**"Risk has two components:**

**(1)The probability / likelihood of failing to achieve particular outcome,**

**(2) The consequences / impacts of failing to achieve that outcome." [2]**

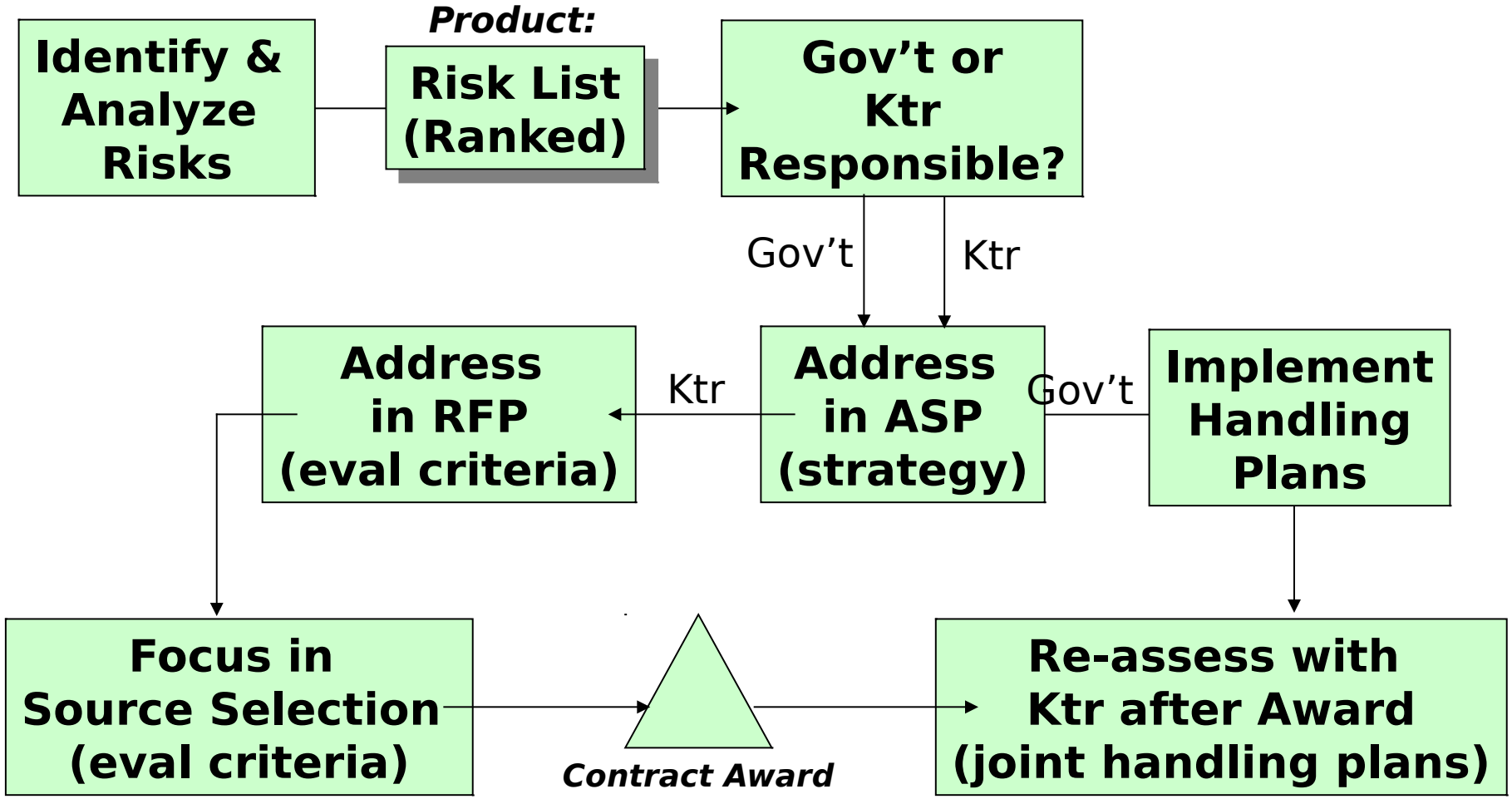
[2] **Risk Management Guide for DOD Acquisition, DSMC, Fifth Edition, June 2002**

# *Why do a Risk Assessment in this Phase?*

**<u>If done correctly</u>, the risk assessment process can …**

- **Objectively assess the program risks in preparation for the acquisition strategy planning (ASP & Acq. Plan/SSAS/SAMP)**
- **Highlight priority actions the Government must accomplish before RFP distribution or contract award**
- **Identify “high-payoff” technical trade parameters**
- **Focus the RFP and (subsequently) the source selection on the real discriminators**

# Risk Assessment in Pre-Award Process



# Risk Assessment Process

# Team Roles/Responsibilities

- **Facilitator**
  - **Objective guide to help the team implement the process**
  - **Gatekeeper (manage the discussions -- i.e., keep everyone focused and on track)**
  - **Timekeeper**
- **Recorder**
  - **Collect data and results without interpretation or analysis (word, excel, white board, flip chart, etc.)**
- **Program and technical experts**
  - **Participate in identification, analysis, prioritization, & handling**
- **Program manager**
  - **Provide leadership, with support from the facilitator, in resolving conflicts related to prioritization and management of risk**

# *Keys to Success*

- **Know the key program requirements**
- **Share your ideas, concerns, and perceptions about the program**
- **Everyone contributes to the process**
- **Don’t criticize the person, discuss the ideas!**
- **Put your “Program Hat” on**

# *Risk Assessment Process*

1. **Identify/Review results of requirements driver session ***
2. **Use structured brainstorming to identify the risks**
3. **Copy and paste risk statements into “Risk Matrix” tool**
4. **Review risk statements: clarify/modify as required**
5. **Rate Impact (I) and Probability (P) of each risk**
6. **Rank risk statements (automated tool step)**
7. **Review ranking for consensus “order”**
   - **Identify high priority risks to manage (“Draw the Line”)**
8. **Identify which risks are the Government’s responsibility for handling & which are potential proposal subjects**
9. **Discuss risk handling plans & approaches for defining handling plans**

**** = optional integrated session***

# 1a: Identify/Review Key Program Requirements

- **Where can we find this information?**
  - **Capstone or ORD, ICD, CDD, or CPD per NSSA 03-01**
  - **Program Management Directive or Acquisition Program Baseline**
  - **Policy Directives (JTA, DII COE, Y2K, SEI Level III, etc.)**
  - **Funding documents, cost estimates, schedule estimates**
  - **Government/Aerospace trade studies, simulations, analyses**
  - **Other (objectives/goals)**
- **How to do it? --> Use Ventana "Groupware":**
  - **Brainstorm key (driving) requirements**
  - **Identify broad categories**
  - **This isn't a spec, just a "framework" for the risk assessment. Identify a few, key drivers in broad categories so nothing important is forgotten.**

# *1b: Identifying Requirements Drivers*

**Agenda:**

- **Ventana orientation**
- **Review “Areas” or “Buckets”**
- **Brainstorm requirements drivers**
  - **Individuals assigned to each bucket**
  - **Individual inputs: “Ideas”**
- **“Distill” drivers (clarify, modify, consolidate, delete)**

# 1c: What's a Requirement Driver?

- **Requirement that is difficult or expensive to achieve**
- **Requirement that is much "higher" than current system performance or current system requirement**
- **Requirement that, once determined, constrains or "drives" several other requirements**

***Remember: Stay "top-level" – we're not writing the spec!***

# *2a: Use Structured Brainstorming to Identify Risks*

- **What is risk? *The inability to achieve program objective***

- **What is the time frame of interest for this assessment?**
  - **Now thru contract award and first x months of execution?**
  - **Probably <u>not</u> into the next program phase, and <u>not</u> entire life cycle**

- **How to do structured brainstorming:**
  - **Attach “Risk Comments” to Ventana “Ideas”**
  - **Use IF/THEN format *(next chart)***

# *2b: Write Clear, Objective Risk Statements*

- **For each requirement driver, write a clear and objective/quantifiable risk statement**
  - **"If" condition, "then" consequences for each risk**

- **For example:**
  - **Requirement reads: "The integrated Block Y Satellite shall be thoroughly tested using the Satellite Tester or equivalent device prior to shipment to the launch base."**
  - **Identified risk: Availability of (GFP) Satellite Tester when needed**

Potential Risk Statement: **IF** *the (GFP) Satellite Tester is more than 1 month late*, **THEN** *our first Block Y Satellite will experience a day for day schedule slip*

# *3: Copy & Paste Risk Statements into Tool*

- **Manual transfer of risk statements from Ventana tool to Risk Matrix tool**

***This is an administrative step that we must allow time for …. So take a break!***

# *4: Review Risk Statements*

- **Risk Statements were written by individuals in Ventana tool**
- **Take a few minutes to review the list in total**
- **Clarify/Modify as required**

# 5: Rate Impact and Probability of Each Risk

**Impact ratings:**

- **Critical–An event that, if it occurred, would cause program failure (inability to achieve minimum acceptable requirements)**
- **Serious–An event that, if it occurred, would cause major cost and schedule increases. Secondary requirements may not be achieved.**
- **Moderate–An event that, if it occurred, would cause moderate cost and schedule increases, but important requirements would still be met.**
- **Minor–An event that, if it occurred, would cause only a small cost and schedule increase. Requirements would still be achieved.**
- **Negligible–An event that, if it occurred, would have no effect on program.**
- **Probability of occurrence values:**
  - **0-10% --> Remote or very unlikely to occur**
  - **11-40% --> Unlikely to occur**
  - **41-60% --> Likely, may occur about half of the time**
  - **61-90% --> Highly likely to occur**
  - **91-100% --> Near certainty or very likely to occur**

# 6: Rank Risk Statements (Automated Tool Step)

- **The risk ranking is based on the likelihood of occurrence and the level of impact:**

**Impact**

| Likelihood / Probability | Negligible | Minor | Moderate | Serious | Critical |
|---|---|---|---|---|---|
| 0-10% | LOW | LOW | LOW | MEDIUM | MEDIUM |
| 11-40% | LOW | LOW | MEDIUM | MEDIUM | HIGH |
| 41-60% | LOW | MEDIUM | MEDIUM | MEDIUM | HIGH |
| 61-90% | MEDIUM | MEDIUM | MEDIUM | HIGH | HIGH |
| 91-100% | MEDIUM | HIGH | HIGH | HIGH | HIGH |

# *7: Review Ranking of Risks*

- **Review the relative ranking of the risks that the tool has done**
- **Focus on the order of the risks and not the ratings (Impact and Probability values)**
- **Does the ranking make sense to you?**
- **Should the order be changed?**

# *8: Identify Primary Responsibility for Each Risk*

- **Determine whether primary responsibility for mitigating each risk is Government (“G”) or Contractor (“K”)**
  - **For “K” risks, mitigation is probably: ask for ____ in proposal**
  - **For “G” risks, define Handling Plan for each**

- **Assign each risk needing a handling plan (“above the line”) to an individual(s): OPR**

# 9a: Risk Handling Plans

- **In theory, you should select the appropriate handling option:**
  - **Control - reduce or mitigate the risk, manage the risk in a way that reduces the likelihood and/or impact of the risk**
  - **Avoidance - change the concept, requirement(s), practice and/or procedure to eliminate the source of the risk**
  - **Assumption - acknowledge the existence of the risk and consciously accept the associated risk level without effort to control it**
  - **Transfer - reallocate the risk to another part of the system thereby reducing the overall system risk**

- **Reality: most of the "G" risks need to be mitigated**

# *9b: Risk Handling Plans*

- **Identify specific actions or steps to be taken to implement the handling option**
- **Define Need Date or Estimated Completion Date (ECD)**
- **Define exit criteria for each handling plan**

# 9c: Handling Plan Example

| ID # | Risk | I | P | Rank Order | Related Risks | Govt or Ktr? | OPR | Handling Plan | ECD |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **IF** contract is not awarded before 30 Sep, **THEN** program loses $8M in expiring funds. | S | 61% | **1** | 4 | G | PM and ADO | Use existing Task Order contract to assure award before 30 Sep | 04-Apr |
| 4 | **IF** first release is not demonstrated in EFX, **THEN** program will be assigned to Navy | C | 41% | **2** | 1,3 | G | PM and User | Integrate only those capabilities available at contract award for first release | 04-Mar |
| 2 | **IF** unmodified commercial laptops are used, **THEN** operational availability cannot be met in | S | 11% | **3** | None | K | K | Address mod plans and design issues in RFP | 06-May |
| 3 | **IF** DII COE V1.5 is more than 1 mo late, **THEN** first release will slip day for day | Mo | 41% | **4** | 4 | G | PM and User | Use DII COE V1.4 for first release and modify requirements | 13-May |

# 9d: Approaches for Defining Handling Plans

## One approach:

- Assign an individual responsible for defining each plan identified as being Government responsibility
- Set a suspense for defining draft plans
- Each OPR (individually) will:
  - Select the appropriate handling option
  - Identify (and document) specific actions or steps to be taken to implement the handling option
  - Manage the handling plan and report status to IPT
- Review plans as a group
- Input plans into “Risk Matrix” tool or some other tracking tool
- Monitor status of each plan often …..

## Alternate approach:

- Collaborative session with all the OPRs to write the handling plans “en masse’

# *Sustaining the Process*

- **Monitor the status of handling plans**
  - **Frequently review handling plans to determine status**
  - **Evaluate the effectiveness of the strategies**
- **Periodically re-assess program risks during the Pre-Award Phase**
  - **Minor (or major) changes in acquisition strategy, funding, etc. can cause major changes to risk list and handling plans**
- **Post award (within 30 days of award)**
  - **Review (or capture) "last known position of Gov't and Ktr(s)**
  - **Merge, update and/or derive Joint Risk List and Handling Plans**
  - **Recognize that some risk may be assigned to Gov't, some to Ktr, and some will be "joint" handling plans**
  - **Also, make risk management a topic at all management reviews (i.e., jointly review status of handling plans)**

# *Some Final Points*

- **Risks that should be discussed in the Acquisition Strategy Panel (ASP) are probably a subset of the risks identified in this session**
  - **Not all of these risks will impact the acquisition strategy**
  - **Some should be "handled" before the ASP!**
  - **Use your judgment**

- **Focus on the ranking (i.e., the relative order of the risks) <u>not</u> the ratings (why #2 was rated "High")**
  - **In a different context, these definitions won't matter**
  - **Suggestion: leave the ratings off the briefing slides**

- **Re-assess often, throughout the Pre-Award Process**

# References


- **“Risk Management Guide for DOD Acquisition,” DSMC, Fifth Edition, June 2002.**
- **AFMC/ENPI, July 1997, “Risk Management,” AFMC Pamphlet 63-101, Headquarters Air Force Material Command, Wright-Patterson AFB.**
- **CMU/SEI, 1996, “Continuous Risk Management Guidebook”, Software Engineering Institute, Pittsburgh, PA (http://www.sei.cmu.edu/).**
- **Conrow, Edmund H., “The Use of Ordinal Risk Scales in Defense Systems Engineering,” Defense Systems Management College, June 1995.**
- **Conrow, Edmund H., “Effective Risk Management: Some Keys to Success,” 2nd Edition AIAA, 2003.**
- **Zsak, M., OUSD (A&T)/DTSE&E, January 2000, “Risk Management,” Defense Acquisition Deskbook,**

# *Backup Slides*

# Requirements Session Agenda & Buckets

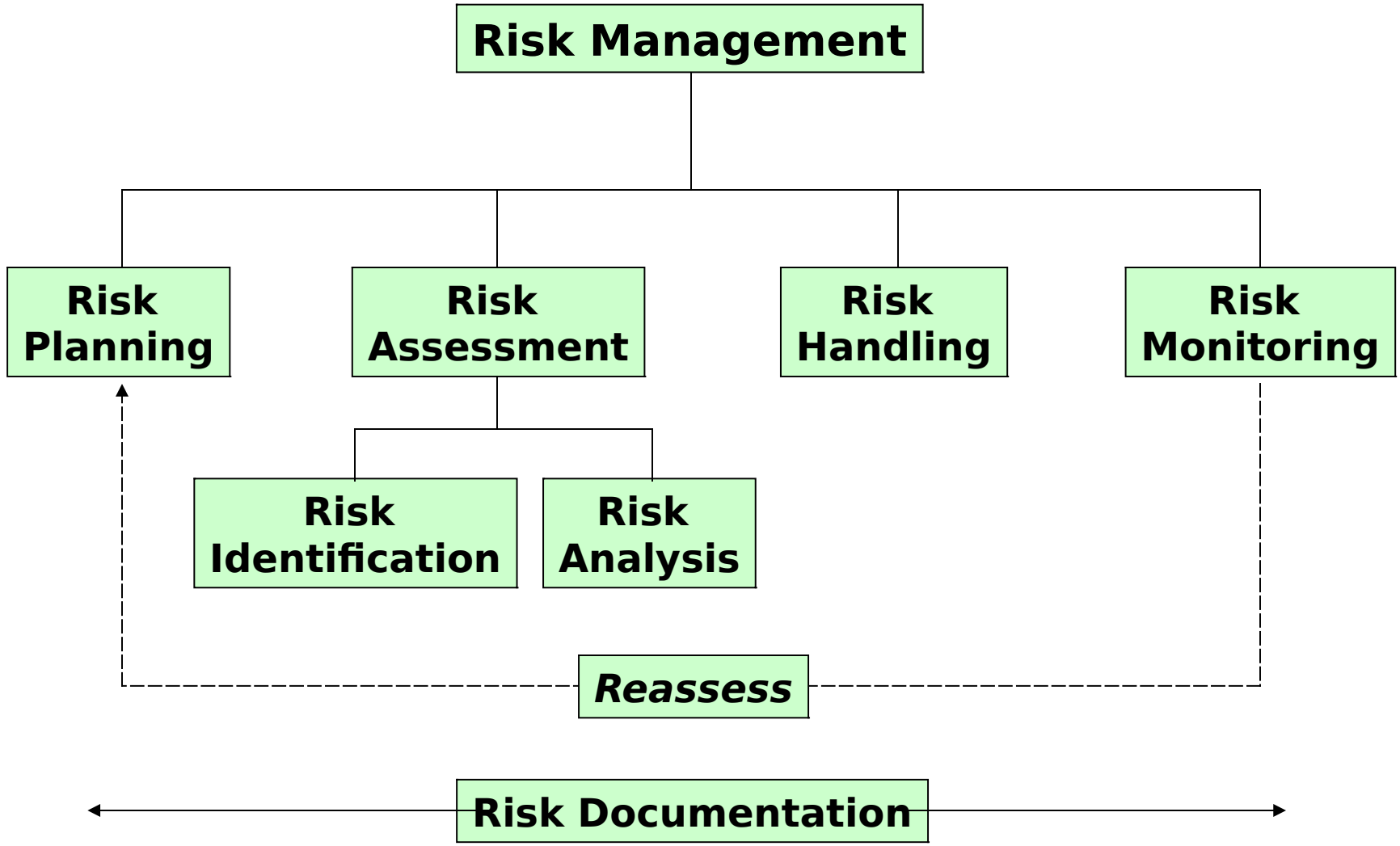
- **Ventana Agenda**
  - **Ventana intro (in case someone wasn't there for SOO Workshop)**
  - **Requirements Drivers Brainstorming (using the following)**
- **Ventana Buckets:**
  - **Technical**
  - **Financial**
  - **Schedule**
  - **Test**
  - **Interfaces**
  - **Operations**
  - **Manufacturing/Production**
  - **Logistics**

# *Why Do Risk Management?*

- **"Risk Management is a program management responsibility and is the act or practice of controlling the risk drivers that adversely affect the program. It includes the process of identifying, analyzing, and tracking risk drivers, assessing the likelihood of their occurrence and their consequences, defining risk-handling plans, and performing continuous assessments to determine how risks change during the life of the program."** [1]

[1] **Mike Zsak, OUSD (A&T)/DTSE&E, January 2000**

# The Risk Management Process




***Based on Risk Management Guide for DOD Acquisition, DSMC, Fifth Edition, Jun 02***

# Risk Management by Program Phase

| Phase | Pre-Award | System Development | Production |
|---|---|---|---|
| Risk "Focus" | What things should we base this source selection on? | Can we design this thing so it works? | Can we make a hundred or a thousand of these things? |
| Assessment Basis | Program Requirements | Design | Mfg, Assy & Test Processes/ Procedures |